BARITE

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Barite, a name that was derived from the Greek word "barus" (heavy), is the mineralogical name for barium sulfate. In commerce, the mineral is sometimes referred to as "barytes." As used in this report, the term "primary barite" refers to the first marketable product, which includes crude barite (run of mine) and the products of simple beneficiation methods, such as washing, jigging, heavy media separation, tabling, flotation, and magnetic separation. Most crude barite requires some upgrading to minimum purity or density. Barite that is used as an aggregate in a "heavy" cement is crushed and screened to a uniform size. Most barite is ground to a small, uniform size before it is used as a filler or extender, an addition to industrial products, or a weighting agent in petroleum well drilling mud [American Petroleum Institute (API) or Oil Companies' Materials Association (OCMA)] specification barite. Barite used for drilling petroleum wells can be blue, black, brown, or gray depending on the ore body; must be finely ground, such that 90% to 95% of the material must pass through a 325-mesh screen; dense, such that its specific gravity is 4.2 or greater; soft enough to not damage the bearings of a tricone drill bit; and both chemically inert and free of soluble salts. A small percentage of iron oxide is allowable. In offshore drilling, the U.S. Environmental Protection Agency limits the content of mercury to 1 milligram per kilogram of barite and that of cadmium to 3 milligrams per kilogram of barite (U.S. Environmental Protection Agency, 1997). This has probably become a de facto specification for the API barite producers because they need to keep their distribution channels simple. Although barite contains a "heavy" metal (barium), it is not a toxic chemical under Section 313 of the Emergency Planning and Community Right-to-Know Act of 1986, because it is very insoluble.

Production

Domestic sales data for barite were derived from voluntary responses to a survey of U.S. operations and estimates of one company by the U.S. Geological Survey. Actual mine production data were sometimes not reported because some mines sporadically produce directly to their raw ore stockpile, beneficiate and sell from those stocks for several years, and report these withdrawals from stocks as production; others produce normally and report their annual production. Of the 27 operations to which a survey was sent, 21 responded, representing approximately 75% of the primary barite sold or used by producers. Another six sites were reported with approximations by telephone conversations with site managers. One grinder was estimated using the unaccounted-for imports.

Two surveyed mines were idle and one surveyed mill was idle. There were 7 active mines and 19 active mills. Six of the active mines had collocated mills. One active mine without a mill sold only run-of-mine ore.

The quantity of primary barite sold or used by producers fell by about 9% from that of 1998, but weighted average prices rose about 7%. Less than 6% of barite sales from domestic producers were for industrial end uses and the remaining sales were for petroleum well drilling for 1999. Grinding to API specifications was not usually performed at the mine site because railroad tariffs were higher for finished barite than for crude barite. This is particularly true for barite destined for use off the Gulf of Mexico. Some barite was ground at the mine sites in Nevada to supply the western United States, the State of Alaska, and the western Canadian provinces' API specification markets.

During the year, Smith International, Inc. formed a joint venture with Schlumberger Ltd. for the drilling and completions fluids business, concentrating outside of the United States. Smith contributed M-I Fluids Operations (and M-I Swaco Operations) to the joint venture, and Schlumberger contributed its non-U.S. Dowell Drilling Fluids Operations. Even though the joint venture did not include the U.S. Dowell Drilling Fluids Operations, there was an allegation of civil contempt, concerning the joint venture, by the U.S. Department of Justice that resulted in a settlement agreement to pay civil fines of about \$7 million, a modest criminal fine resulting from a court decision, and a Justice Department agreed-to modification to the 1994 Baroid Consent Decree and Final Order. This Decree was created when Dresser sold its portion of M-I to Smith International. In that Decree, Smith International was barred from combining with other drilling fluids firms including Schlumberger. Halliburton Co. owns the Baroid Drilling Fluids Division. The third major U.S. barite company was Baker Hughes Inteq, a division of Baker Hughes, Inc. These three companies mine barite in Nevada with collocated beneficiation plants.

The same three Nevada companies receive barite that is imported using ocean transport to the Louisiana and Texas shores of the Gulf of Mexico. This location is closer to the large, offshore drilling rigs and the clusters of onshore areas of exploration and significant discoveries (plays) in the Petroleum Administration for Defense District 3 (where searching for gas and oil is most profitable). These three producers and other smaller companies import and grind, or crush, barite for drilling mud. Two smaller companies mine and beneficiate barite for the filler and extender and chemical industries in Georgia. Two companies import, or purchase domestic, barite

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for grinding in Illinois for the Midwest filler and extender and chemical industry markets.

Consumption

Barite apparent consumption dropped about 46% to about 1.3 million metric tons (Mt) compared with that of 1998. The sales by crushers and grinders were 100,000 t greater than the calculated apparent consumption which would indicate that the crushers and grinders were withdrawing material from the large stockpiles of barite that built up, in the middle of 1998, as oil and gas prices dropped and drilling slowed down. Barite imports during 1998 did slow down and barite imports for 1999 were down 54% to 871,000 metric tons (t) from the 1998 total. In fact, the first half of 1998 imports were 1.46 Mt of crude barite, while the first half of 1999 imports were 0.43 Mt, a drop of 70%, while the imports actually rose for the second half of 1999 from the second half of 1998 by about 3% to about 0.4 Mt.

The average futures price of light sweet West Texas crude started the year at about \$11.50 per barrel in January and rose from about \$11.70 per barrel as reported in March, to about \$26.80 per barrel as reported at the beginning of December. The oil directed drill rigs in the United States declined from about 150 rigs in January to about 110 rigs in March and April, then rose to about 135 rigs in June, fell to about 100 in August and rose again to about 145 rigs in early December. By comparison there were about 500 oil directed drill rigs in use in January 1998. The active oil directed rigs count clearly did not follow the price increase in oil for several possible reasons. One possible reason could have been that the oil exploration divisions or companies, or their bankers, did not trust the intermediate term oil price stability, or that many companies lost money in the previous year's price slide and did not have the cash for funding oil exploration. It could have been that the ability of some countries to produce more oil, more quickly, and ship it to the U.S. shores rather quickly dampened U.S. oil exploration enthusiasm. Another possible reason comes from a reviewed analysis of additions to oil reserves that reports "...additions were subpar and per-unit costs soared to uneconomic levels" [about \$9 per barrel of oil equivalent] (Oil & Gas Journal, 1999a). A later analysis reported that the largest oil and gas firms did reduce capital spending while replacing sold crude by buying proven reserves where the cost was about \$5 per barrel oil equivalent instead of performing exploration and development at the unprofitable level of \$9 per barrel. This shift in company strategy appears to be a likely contributor to the low oil directed drill rig count and low barite consumption in the oil-well drilling industry. The remaining oil directed rigs did provide a much lower than normal, but steady, demand for barite.

The average futures price for 1999 of natural gas fell from about \$2.00 per thousand British thermal units (Btu) in January to about \$1.75 per thousand Btu in March, then rose unevenly to about \$3 per thousand Btu in September, fell and rose again to about \$3 per thousand Btu in November and fell to about \$2.15 per thousand Btu at the beginning of December. In 1998, the count of active gas-directed drill rigs was about 645

in January and had fallen to about 500 in December. The rig count for 1999 started January at about 485, falling to about 360 in May, and rising unevenly to about 650 rigs in the beginning of December 1999. The active gas-directed rig count clearly followed an uneven gas price increase after May 1999 and was not affected by the unevenness of the prices. Domestic natural gas exploration responded because there are few liquified natural gas (LNG) ships that were not under long-term contract. There is a delivery bottleneck with only four, U.S. unloading facilities for natural gas by ship of which only two are in use (Swain, 1999). The imports of natural gas by ship are on the order of 0.4% of total natural gas consumption in 1998 using Swain's projection of 86 billion cubic feet of natural gas imported by ship in 1998 and Energy Information Agency's 21.4 trillion cubic feet consumed in 1998 (Energy Information Agency, 2000, U.S. Natural Gas Information at a glance, accessed August 3, 2000, at http://www.eia.doe.gov/pub/oil gas/natural_gas/data_publications/natural_gas_monthly/current /pdf/table 03.pdf). Further, the LNG ship unloading facilities cannot ship to all regions of the United States so that drilling for gas in the pipeline gathering region is the only way to maintain gas reserves to the pipeline's customers. Another possible explanation was that the 1999 gas directed exploration and development efforts were more successful with replacing consumed gas with relatively low cost, profitable, new, gas reserves. The exploration and development divisions of the natural gas producers must have been the main consumers of domestic barite for 1999.

The output of crushers and grinders, compared with 1998, of both domestic production and imported barite in 1999 declined by more than 25% (table 2). The outputs of crushers and grinders in Louisiana declined by less than 30%, while the outputs of crushers and grinders in Texas declined by nearly 50%. Perhaps Texas supplies a more oil oriented group of drillers, while Louisiana supplies a more gas oriented group of drillers. The outputs of crushers and grinders in Nevada were unchanged. The prices of the production of the various regions were relatively unchanged, which would seem to indicate that the grinders in all States were successful in matching their output to demand so that oversupply did not drive down the prices.

Industrial end-use sales output of crushers and grinders of domestic production and imported barite in 1999 declined by about 4% and well drilling sales declined by about 30%.

Prices

Nominal average weighted sales price for primary barite from mines and their associated beneficiation plant in the United States increased by 7%, to \$25.58 per ton, in 1999. Nominal average prices for the crushed and ground barite increased by 2%, to \$78.83 per ton, compared with those of 1998.

According to Industrial Minerals (1999), midyear international prices were as follows:

• API, lump, c.i.f. (cost, insurance, and freight) [U.S.] Gulf Coast, Chinese, \$40 to \$42 per ton, Indian, \$42 to \$45,

- Moroccan, \$50 to \$52.
- Unground, OCMA/API, bulk, specific gravity 4.2, f.o.b. (free on board) Morocco, \$40 to \$42 per ton.
- Ground, bagged, specific gravity 4.22, f.o.b. Morocco, \$75 to \$85 per ton.
- Ground, OCMA/API, big bags (1.5 tons) f.o.b. South Turkey, \$64 to \$68 per t.
- Ground, OCMA, bulk, delivered Aberdeen [United Kingdom], \$78.74 to \$86.62 [£50-£55], {International Monetary Fund, IMF Statistical Dept., International Financial Statistics, 2000, Exchange Rates, Currency Units per SDR in June 1999, June 30 column, accessed June 22, 2000, at URL http://www.imf.org/external/np/tre/sdr/1999/sdr9906.htm,
 - [\$1.33587/Special Drawing Right (SDR),
 - $\pounds 0.84823/SDR]\}$ per ton, delivered Great Yarmouth [United Kingdom], \$91.34 to \$102.37 [£58-£65] per ton.
- Micronized, off white minimum 99% less than 20 micrometers delivered United Kingdom, \$220.48 to \$236.23 [£140-£150] per ton.
- Ground, white, paint-grade, 96% to 98% BaSO₄, 350 mesh, 1 to 5 tons delivered United Kingdom, \$307.10 to \$346.48 [£195-£220] per ton.

World Review

In about mid-December 1998, with the price ranges of \$11.50 per barrel for West Texas light sweet crude, and \$9.50 per barrel for Brent 38^N crude, many crude producers were not earning income on their investments, and these were probably just covering out-of-pocket cash costs. For example, in the first quarter of 1999, in the United States, 4 of the 18 large integrated companies lost money, 17 of the 52 large independent companies lost money, and 14 of the 26 small independent companies lost money (Beck and Bell, 1999). Near the end of March 1999, the Organization of Petroleum Exporting Companies (OPEC) announced that 10 OPEC members, lead by Saudi Arabia and Argentina, had agreed to more cuts of 1.7-million-barrel-per-day total, and nonmembers Mexico and Norway had volunteered to withhold production of 0.4-million-barrel-per-day total, in a coordinated effort, to raise the price of petroleum worldwide. The production withholding took effect at the end of March, and oil prices and petroleum product prices rose all through the rest of the year.

The barite industry had slowed down in the middle of 1998 and there was a relatively slow market in the United States as there were ample stocks of barite on the Louisiana and Texas shores of the Gulf of Mexico. There were no new mines opening up around the world; there were many mines looking for barite purchasers and new markets.

According to the world drill rig reports, which do not cover most of the former and present Centrally Planned Economies, the world drill rig count started to decline, in about December 1997, from about 2,320, was about 1,550 active drill rigs in January 1999, and reached a low of about 1,155 active drill rigs in May 1999 [Oil & Gas Journal, 1999-2000 (the third issues of each month); Laura Bell, Oil & Gas Journal, unpublished

November 1999 statistics, written commun., June 23, 2000]. Going from the region with the lowest rig count to the region with the highest rig count:

Africa.—The African active drill rig count declined from about 60 rigs in January 1999 to about 35 rigs in September and November. Barite consumption probably declined in that region.

Asia-Pacific.—The Asia-Pacific driller count has been declining since about May 1998 when there were about 187 active rigs. From about 150 rigs in January 1999, rig count increased the drill rig count in the first 3 months, climbing to about 158 rigs then fell to 121 rigs in August, ending at 127 rigs. While Asia-Pacific seems to be both an oil and a gas region, the June 1997 regional economic turmoil has lowered or reversed the demand rates-of-increase for LNG. While the region has started to recover from the economic turmoil, long-term energy projects have been disrupted by low gas prices. Prices had fallen to such unprofitable levels that companies had lost their ability to finance further exploration until cash flows again turn positive (Oil & Gas Journal, 1999b).

Canada.—Canadian drill rigs usage started the year at about 320 rigs in January, fell to a low of about 60 rigs in May of 1999 but recovered to about 385 active drill rigs in December 1999. Historically, Canada went from a peak of 507 in February 1998 to a peak of 332 in February 1999 to a peak of 544 in February 2000. Canada has a pattern of a high count in the winter and a low count in the summer in normal times. Canadian rig data were not broken out by oil-directedness or gas-directedness. Canada is an important gas supplier to the United States.

Europe.—Europe was on an uneven decline through 1998 and went from about 90 drill rigs in January 1999 down to about 65 rigs in January 2000. It is not clear if exploration and development was profitable in this region for the year 1999.

Latin America.—Latin America varied between 170 rigs and 200 rigs without much reaction to the oil price change. The rig operators did not draw on U.S. barite crushers and grinders for their barite, and Latin American barite producers must have had a nearly normal year.

Middle East.—The Middle East rig count was declining from July to December 1998 and was at about 145 active drill rigs in January 1999, going down to a low of 130 rigs in September, and up to about 140 rigs in December 1999. The Middle East was not strongly affected by either the low prices of 1998 or the strongly rising prices of 1999. Some producers would simply have to reopen some valves. It appears that countries, other than the main oil producers, started to respond to the higher prices after September 1999 by adding drill rigs.

Outlook

It is uncertain if exploration and development for new oil reserves in the United States will cost less in the future for the oil industry than they did in 1999. The gas industry looks more viable and profitable in the exploration and development departments, and could be a source of barite demand for many years. However, it may be that the barite-for-drilling-mud market will slowly move away from the United States over the

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long-term and the U.S. demand for barite may not be able to support three barite suppliers as drilling activity moves to Africa, Asia-Pacific, and the former Soviet Union.

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TABLE 1 SALIENT BARITE STATISTICS 1/2/

(Thousand metric tons and thousand dollars)

1995	1996	1997	1998	1999
543	662	692	476	434
\$10,400	\$14,700	\$15,500	\$11,400	\$11,100
16	31	22	15	22
\$2,020	\$3,190	\$2,430	\$2,310	\$2,750
1,060 r/	1,550 r/	2,260 r/	1,890 r/	871
\$65,600 r/	\$94,600 r/	\$136,000 r/	\$122,000 r/	\$59,000
1,580 r/	2,180 r/	2,930 r/	2,350 r/	1,280
1,370	1,870	2,180	1,890	1,370
\$99,800	\$141,000	\$173,000	\$146,000	\$108,000
4,870	6,090 r/	6,770 r/	6,500 r/	5,660 e/
	543 \$10,400 16 \$2,020 1,060 r/ \$65,600 r/ 1,580 r/ 1,370 \$99,800	543 662 \$10,400 \$14,700 16 31 \$2,020 \$3,190 1,060 r/ 1,550 r/ \$65,600 r/ \$94,600 r/ 1,580 r/ 2,180 r/ 1,370 1,870 \$99,800 \$141,000	543 662 692 \$10,400 \$14,700 \$15,500 16 31 22 \$2,020 \$3,190 \$2,430 1,060 r/ 1,550 r/ 2,260 r/ \$65,600 r/ \$94,600 r/ \$136,000 r/ 1,580 r/ 2,180 r/ 2,930 r/ 1,370 1,870 2,180 \$99,800 \$141,000 \$173,000	543 662 692 476 \$10,400 \$14,700 \$15,500 \$11,400 16 31 22 15 \$2,020 \$3,190 \$2,430 \$2,310 1,060 r/ 1,550 r/ 2,260 r/ 1,890 r/ \$65,600 r/ \$94,600 r/ \$136,000 r/ \$122,000 r/ 1,580 r/ 2,180 r/ 2,930 r/ 2,350 r/ 1,370 1,870 2,180 1,890 \$99,800 \$141,000 \$173,000 \$146,000

- e/ Estimated. r/ Revised.
- 1/ Data are rounded to no more than three significant digits.
- 2/ Barium chemicals data withheld to avoid disclosing company proprietary data.
- 3/ Includes crude and ground.
- 4/ Sold or used plus imports minus exports.
- 5/ Includes imports.

TABLE 2 CRUSHED AND GROUND BARITE SOLD OR USED BY PROCESSORS IN THE UNITED STATES, BY STATE 1/ $2 \rm /$

		1998			1999	
		Quantity			Quantity	
	Number	(thousand	Value	Number	(thousand	Value
State	of plants	metric tons)	(thousands)	of plants	metric tons)	(thousands)
Louisiana	7	1,160	\$89,600	7	835	\$63,900
Texas	4	409	32,400	4	215	16,700
Other 3/	8	321	24,200	8	322	27,500
Total	19	1,890	146,000	19	1,370	108,000

^{1/} Data are rounded to no more than three significant digits; may not add to totals shown.

TABLE 3 CRUSHED AND GROUND BARITE SOLD OR USED BY PROCESSORS IN THE UNITED STATES, BY USE 1/ $2 \rm /$

(Thousand metric tons and thousand dollars)

	199	1998		1999	
Use	Quantity	Value	Quantity	Value	
Barium chemicals, filler and/or extender, glass	81	15,500	78	13,500	
Well drilling	1,810	131,000	1,290	94,600	
Total	1,890	146,000	1,370	108,000	

^{1/} Data are rounded to no more than three significant digits; may not add to totals shown.

^{2/} Includes imports.

^{3/} Includes California, Georgia, Illinois, and Nevada.

^{2/} Includes imports.

 ${\bf TABLE~4} \\ {\bf U.S.~EXPORTS~OF~NATURAL~BARIUM~SULFATE~(BARITE),~BY~COUNTRY~1/}$

	19	98	1999		
	Quantity	Value	Quantity	Value	
Country	(metric tons)	(thousands)	(metric tons)	(thousands)	
Argentina	76	\$16	131	\$35	
Australia		52			
Belgium	1	3	1	3	
Brazil		17			
Canada	11,300	1,250	19,200	1,640	
Chile			10	6	
China	32	10	19	13	
Colombia	413	63	17	8	
Costa Rica			62	15	
Germany		9			
Guatemala			4	12	
India		9			
Japan	54	87	61	109	
Korea, Republic of			71	150	
Mexico	2,330	620	2,220	721	
Oman	6	21	5	18	
Panama		8			
Peru	232	48			
Singapore	72	9	1	3	
United Arab Emirates			9	21	
Venezuela	36	87			
Total	14,700	2,310	21,800	2,750	

^{1/} Data are rounded to no more than three significant digits; may not add to totals shown.

Source: U.S. Census Bureau.

 ${\bf TABLE~5} \\ {\bf U.S.~IMPORTS~FOR~CONSUMPTION~OF~BARITE,~BY~COUNTRY~1/}$

	199	98	1999		
	Quantity	Value 2/	Quantity	Value 2/	
Country	(metric tons)	(thousands)	(metric tons)	(thousands)	
Barite, crude:					
Australia			57	\$17	
Canada	13,100	\$2,820	14,100	3,060	
China	1,560,000	86,100	654,000	32,600	
Germany	748	90	2,700	205	
India	228,000	12,300	136,000	5,990	
Japan			91	7	
Mexico	2,210	196	2,320	139	
Morocco	20,000	1,010			
Thailand	25,200	1,120	26,500	1,410	
United Kingdom	290	9			
Total	1,850,000	104,000	836,000	43,500	
Barite, ground: China			17,200	1,250	
Barite, other sulfates of:					
Belgium			12	9	
Canada	11,900	3,180	636	641	
China	423	159	304	122	
Denmark		8			
Germany	8,240	8,800	8,350	9,210	
Italy	4,590	3,110	4,360	2,620	
Japan	335	1,610	465	1,260	
Mexico	9,030	892	3,280	371	
Netherlands	116	57	117	46	
Thailand			1	9	
Turkey		9	13	23	
Total	34,700	17,800	17,500	14,300	

⁻⁻ Zero.

Source: Bureau of the Census, as adjusted by the U.S. Geological Survey.

 ${\bf TABLE~6} \\ {\bf U.S.~IMPORTS~FOR~CONSUMPTION~OF~BARIUM~CHEMICALS~1/}$

	199	8	1999		
	Quantity	Value 2/	Quantity	Value 2/	
	(metric tons)	(thousands)	(metric tons)	(thousands)	
Barium chloride	1,960	1,240	1,990	1,510	
Barium oxide, hydroxide, peroxide	4,000	4,770	4,310	4,460	
Barium nitrate	4,460	6,640	3,940	3,320	
Barium carbonate, precipitated	23,500	14,100	25,400	14,400	
Other barium compounds	13,300	13,600	13,200	13,100	

^{1/} Data are rounded to no more than three significant digits.

Source: U.S. Census Bureau.

^{1/} Data are rounded to no more than three significant digits; may not add to totals shown.

^{2/} C.i.f. value.

^{2/} C.i.f. value.

TABLE 7 BARITE: WORLD PRODUCTION, BY COUNTRY 1/2/

(Metric tons)

Country	1995	1996	1997	1998	1999 e/
Afghanistan e/ 3/	2,000	2,000	2,000	2,000	2,000
Algeria	29,838	31,348	32,000 e/	32,000 e/	30,000
Argentina	28,907	14,038	9,532	1,833 r/	1,300
Australia e/	11,729 4/	12,000	15,000	13,000 r/	12,000
Belgium e/	30,000	30,000	30,000	40,000	30,000
Bulgaria 5/	150,000	120,000	120,000 e/	100,000 e/	100,000
Bolivia	10,845	4,745	4,402	2,500 r/	6,005 4/
Bosnia and Herzegovina e/ 6/	1,000	500	2,000	2,000	2,000
Brazil (beneficiated)	30,750	39,662	51,961	46,632 r/	46,600
Burma	34,601	24,679	17,111	22,004 r/	24,651 4/
Canada	61,000	58,000	77,000 r/	90,000 r/	126,000 p/
Chile	3,080	2,559	2,654	1,430	1,520
China e/	1,800,000	2,800,000	3,500,000	3,300,000 r/	2,800,000
Colombia	21,300	6,800	600 e/	600 e/	600
Egypt	500 e/				
France e/	75,450 4/	75,000	75,000	75,000	60,000
Georgia e/	20,000	20,000	20,000	20,000	15,000
Germany (marketable Ba ₂ SO ₄)	122,268	121,476	118,698	120,000 e/	120,000
Greece (crude ore)	668	671	700	700 e/	700
Guatemala	1,152	1,090	1,200	1,200 e/	1,250
India	421,867	369,500	409,498 r/	749,412 r/	600,000
Iran e/ 3/	150,000	150,000	181,174 4/	180,000	170,000
Italy	44,000	80,463	26,300	30,000 e/	25,000
Kazakhstan 6/	83,000	50,000 e/	38,000 e/	9,000	13,300 4/
Kenya e/	20	20	20	10	10
Korea, North e/	120,000	110,000	120,000	100,000	70,000
Korea, Republic of	90	80	105 e/	r/	
Laos e/	5,000	6,000	8,000	9,050 4/	6,600 4/
Malaysia	16,966	17,458	2,608	1,580 r/	11,651 4/
Mexico	248,367	470,028	236,606	161,555	136,677 4/
Morocco	289,308	288,308	343,314	353,438	330,000 p/
Nigeria			4,000 e/	5,000 e/	5,000
Pakistan	15,360	18,582	23,390 r/	20,657 r/	16,845 4/
Peru	37,476	37,103	63,600	75,060 r/	75,000
Poland	25,400	21,700	3,400 r/	r/	
Romania	18,169	12,541	12,000 e/	10,337 r/	4,641 4/
Russia e/	70,000	70,000	60,000	60,000	60,000
Saudi Arabia	6,000	8,000	8,000 e/	8,000	7,000
Slovakia	25,000 e/	45,000 r/	62,000 r/	15,000 r/	15,000
South Africa	6.048 r/	7,428	2,071	610 r/e/	
Spain e/	28,600 4/	28,000	28,000	28,000	26,000
Thailand	35,883	48,074	54,817	105,221 r/	80,000
Tunisia	10,825	15,360	12,841	8,011	7,000
Turkey (run-of-mine)	153,719	104,872	226,594 r/	160,042 r/	130,000
United Kingdom	85,000 e/	102,000	74,000	64,000 r/	55,000
United States 7/	543,000	662,000	692,000	476,000	434,000 4/
Total	4,870,000	6,090,000 r/	6,770,000 r/	6,500,000 r/	5,660,000

e/ Estimated. p/ Preliminary. r/ Revised. -- Zero.

 $^{1/\} World\ totals,\ U.S.\ data,\ and\ estimated\ data\ are\ rounded\ to\ three\ significant\ digits;\ may\ not\ add\ to\ totals\ shown.$

^{2/} Table includes data available through June 9, 2000.

^{3/} Data are for fiscal year beginning March 21 of that stated.

^{4/} Reported figure.

^{5/} Based on an estimated 70% recovery factor.

^{6/} Barite concentrates.

^{7/} Sold or used by producers.